

FORMING AND SMOOTHING D₂ AND HD LAYERS FOR ICF BY INFRA-RED HEATING

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We describe a technique to form uniform solid D₂ or HD layers in inertial confinement fusion targets by pumping their collision induced vibration-rotation band. Pumping this absorption band in solid D₂ or HD redistributes the solid with a time constant near the calculated value. We have observed redistribution rates, (and thus infra-red induced heat generation rates) in HD up to ten times higher than the DT value. We can also control the surface roughness of these fusion fuel layers by infra-red heating. Measured and modeled surface roughness decrease with increasing infra-red heating. With this technique, we can form solid fuel layers with surface roughness well below the National Ignition Facility specification.

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